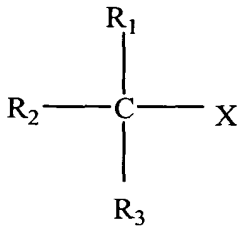
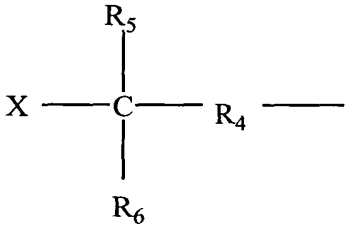
CLAIMS

What is claimed is:

1. A polymerization method for use in a continuous slurry polymerization reactor in preparing random copolymers of one or more isoolefin monomers and one or more conjugated diene monomers, the reacted monomers forming the slurry within the reactor, the method comprising reacting in a polar diluent the isoolefin and diene monomers, a Lewis acid, and an initiator, wherein the initiator has the formula:



wherein X is a halogen; R_1 is selected from the group consisting of C_1 to C_8 alkyl, and C_2 to C_8 alkenyl; R_3 is selected from the group consisting of, C_1 to C_8 alkyl, C_2 to C_8 alkenyl and phenylalkyl; and R_2 is selected from the group consisting of C_4 to C_{200} alkyl, C_2 to C_8 alkenyl, phenyl, phenylalkyl, alkylphenyl, C_3 to C_{10} cycloalkyl, and



wherein X is a halogen; R_5 is selected from the group consisting of, C_1 to C_8 alkyl, and C_2 to C_8 alkenyl; R_6 is selected from the group consisting of, C_1 to C_8 alkyl, C_2 to C_8 alkenyl and phenylalkyl; and R_4 is selected from the group consisting of phenylene, biphenyl, α,ω-diphenylalkane and --$(CH_2)_n$--, wherein n is an integer from 1 to 10; and wherein R_1, R_2, and R_3

can also form adamantyl or bornyl ring systems, the X group being in a tertiary carbon position; and

wherein the Lewis acid and the initiator are contacted with a contact time of from less than 60s prior to contacting with the isoolefin and the diene monomers.

2. The polymerization method of claim 1, wherein the contact time is from less than 30s.

3. The polymerization method of claim 1, wherein the contact time is from less than 25s.

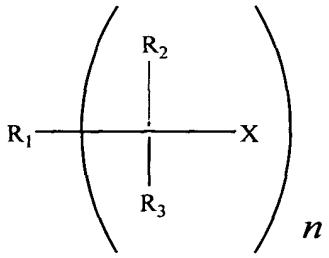
4. The polymerization method of claim 1, wherein the contact time is from less than 20s.

5. The polymerization method of claim 1, wherein the contact time is from less than 15s.

6. The polymerization method of claim 1, wherein the contact time is from less than 10s.

7. The polymerization method of claim 1, wherein the contact time is from less than 5s.

8. A continuous slurry polymerization process for preparing random copolymers of one or more isoolefin monomers and one or more para-alkylstyrene monomers comprising reacting in an anhydrous polymerization system of said monomers, a polar solvent, a Lewis acid, and an initiator, said polymerization system being capable of forming an in-situ electron pair donor initiator having the formula:



wherein:

R_1 is an alkyl, alkenyl, aryl, aralkyl, or aralkenyl group containing up to 30 carbon atoms but not less than 3 carbon atoms unless R_1 contains at least one olefinic unsaturation,

R_2 and R_3 are alkyl, aryl, or aralkyl groups containing up to 30 carbon atoms and can be the same or different,

x is a halogen or a carboxy, hydroxyl, or alkoxyl group, and

n is a positive whole number; and

wherein the Lewis acid and the initiator are contacted with a contact time of from less than 60s prior to contacting with the isoolefin and the para-alkylstyrene monomers.

9. The continuous slurry polymerization process of claim 8, wherein the contact time is from less than 30s.

10. The continuous slurry polymerization process of claim 8, wherein the contact time is from less than 25s.

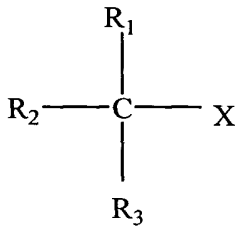
11. The continuous slurry polymerization process of claim 8, wherein the contact time is from less than 20s.

12. The continuous slurry polymerization process of claim 8, wherein the contact time is from less than 15s.

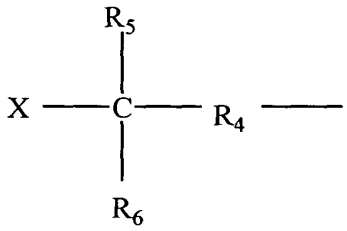
13. The continuous slurry polymerization process of claim 8, wherein the contact time is from less than 10s.

14. The continuous slurry polymerization process of claim 8, wherein the contact time is from less than 5s.

15. A polymerization method for use in a continuous slurry polymerization reactor in preparing a homopolymer of an isoolefin, the reacted monomers forming the slurry within the reactor, a Lewis acid, and an initiator, wherein the initiator has the formula:



wherein X is a halogen; R_1 is selected from the group consisting of C_1 to C_8 alkyl, and C_2 to C_8 alkenyl; R_3 is selected from the group consisting of, C_1 to C_8 alkyl, C_2 to C_8 alkenyl and phenylalkyl; and R_2 is selected from the group consisting of C_4 to C_{200} alkyl, C_2 to C_8 alkenyl, phenyl, phenylalkyl, alkylphenyl, C_3 to C_{10} cycloalkyl, and



wherein X is a halogen; R_5 is selected from the group consisting of, C_1 to C_8 alkyl, and C_2 to C_8 alkenyl; R_6 is selected from the group consisting of, C_1 to C_8 alkyl, C_2 to C_8 alkenyl and phenylalkyl; and R_4 is selected from the group consisting of phenylene, biphenyl, α,ω-diphenylalkane and --$(CH_2)_n$--, wherein n is an integer from 1 to 10; and wherein R_1, R_2, and R_3

can also form adamantyl or bornyl ring systems, the X group being in a tertiary carbon position; and

wherein the Lewis acid and the initiator are contacted with a contact time of from less than 60s prior to contacting with the isoolefin.

16. The polymerization method of claim 15, wherein the contact time is from less than 30s.

17. The polymerization method of claim 15, wherein the contact time is from less than 25s.

18. The polymerization method of claim 15, wherein the contact time is from less than 20s.

19. The polymerization method of claim 15, wherein the contact time is from less than 15s.

20. The polymerization method of claim 15, wherein the contact time is from less than 10s.

21. The polymerization method of claim 15, wherein the contact time is from less than 5s.